

STREAM INVENTORY REPORT

Jacoby Creek

INTRODUCTION

A stream inventory was conducted from June 3 to July 16, 2008 on Jacoby Creek. The survey began at the confluence with Arcata Bay and extended upstream 9.3 miles. Stream inventories and reports or subsections to this report were also completed for three tributaries to Jacoby Creek.

The Jacoby Creek inventory was conducted in two parts: habitat inventory and biological inventory. The objective of the habitat inventory was to document the habitat available to anadromous salmonids in Jacoby Creek. The objective of the biological inventory was to document the presence and distribution of juvenile salmonid species.

The objective of this report is to document the current habitat conditions and recommend options for the potential enhancement of habitat for Chinook salmon, coho salmon, and steelhead trout. Recommendations for habitat improvement activities are based upon target habitat values suitable for salmonids in California's north coast streams.

WATERSHED OVERVIEW

Jacoby Creek is a tributary to Humboldt Bay, which drains into the Pacific Ocean, located in Humboldt County, California (Map 1). Jacoby Creek's legal description at the confluence with Arcata Bay is T5N R1E S5. Its location is 40.8436 north latitude and 124.0813 west longitude, LLID number 1240814408436. Jacoby Creek is a third order stream and has approximately 20.2 miles of blue line stream according to the USGS Arcata South 7.5 minute quadrangle. Jacoby Creek drains a watershed of approximately 17 square miles. Elevations range from about 0 feet at the mouth of the creek to 1,800 feet in the headwater areas. Redwood forest dominates the watershed. The watershed is primarily privately owned and is managed for timber production, rangeland, recreation, and rural subdivision. Vehicle access exists via Highway 101 south of Arcata.

METHODS

The habitat inventory conducted in Jacoby Creek follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al, 1998). The Watershed Stewards Project/AmeriCorps (WSP) Members that conducted the inventory were trained in standardized habitat inventory methods by the California Department of Fish and Game (DFG). This inventory was conducted by a two-person team.

SAMPLING STRATEGY

The inventory uses a method that samples approximately 10% of the habitat units within the survey reach. All habitat units included in the survey are classified according to habitat type and their lengths are measured. All pool units are measured for maximum depth, depth of pool tail

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crest (measured in the thalweg), dominant substrate composing the pool tail crest, and embeddedness. Habitat unit types encountered for the first time are measured for all the parameters and characteristics on the field form. Additionally, from the ten habitat units on each field form page, one is randomly selected for complete measurement.

HABITAT INVENTORY COMPONENTS

A standardized habitat inventory form has been developed for use in California stream surveys and can be found in the *California Salmonid Stream Habitat Restoration Manual*. This form was used in Jacoby Creek to record measurements and observations. There are eleven components to the inventory form.

1. Flow:

Flow is measured in cubic feet per second (cfs) near the bottom of the stream survey reach using a Marsh-McBirney Model 2000 flow meter.

2. Channel Type:

Channel typing is conducted according to the classification system developed and revised by David Rosgen (1994). This methodology is described in the *California Salmonid Stream Habitat Restoration Manual*. Channel typing is conducted simultaneously with habitat typing and follows a standard form to record measurements and observations. There are five measured parameters used to determine channel type: 1) water slope gradient, 2) entrenchment, 3) width/depth ratio, 4) substrate composition, and 5) sinuosity. Channel characteristics are measured using a clinometer, hand level, hip chain, tape measure, and a stadia rod.

3. Temperatures:

Both water and air temperatures are measured and recorded at every tenth habitat unit. The time of the measurement is also recorded. Both temperatures are taken in degrees Fahrenheit at the middle of the habitat unit and within one foot of the water surface.

4. Habitat Type:

Habitat typing uses the 24 habitat classification types defined by McCain and others (1990). Habitat units are numbered sequentially and assigned a type identification number selected from a standard list of 24 habitat types. Dewatered units are labeled "dry". Jacoby Creek habitat typing used standard basin level measurement criteria. These parameters require that the minimum length of a described habitat unit must be equal to or greater than the stream's mean wetted width. All measurements are in feet to the nearest tenth. Habitat characteristics are measured using a clinometer, hip chain, and stadia rod.

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5. Embeddedness:

The depth of embeddedness of the cobbles in pool tail-out areas is measured by the percent of the cobble that is surrounded or buried by fine sediment. In Jacoby Creek, embeddedness was ocularly estimated. The values were recorded using the following ranges: 0 - 25% (value 1), 26 - 50% (value 2), 51 - 75% (value 3) and 76 - 100% (value 4). Additionally, a value of 5 was assigned to tail-outs deemed unsuited for spawning due to inappropriate substrate like bedrock, log sills, boulders or other considerations.

6. Shelter Rating:

Instream shelter is composed of those elements within a stream channel that provide juvenile salmonids protection from predation, reduce water velocities so fish can rest and conserve energy, and allow separation of territorial units to reduce density related competition for prey. The shelter rating is calculated for each fully-described habitat unit by multiplying shelter value and percent cover. Using an overhead view, a quantitative estimate of the percentage of the habitat unit covered is made. All cover is then classified according to a list of nine cover types. In Jacoby Creek, a standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) was assigned according to the complexity of the cover. Thus, shelter ratings can range from 0-300 and are expressed as mean values by habitat types within a stream.

7. Substrate Composition:

Substrate composition ranges from silt/clay sized particles to boulders and bedrock elements. In all fully-described habitat units, dominant and sub-dominant substrate elements were ocularly estimated using a list of seven size classes and recorded as a one and two, respectively. In addition, the dominant substrate composing the pool tail-outs is recorded for each pool.

8. Canopy:

Stream canopy density was estimated using modified handheld spherical densimeters as described in the *California Salmonid Stream Habitat Restoration Manual*. Canopy density relates to the amount of stream shaded from the sun. In Jacoby Creek, an estimate of the percentage of the habitat unit covered by canopy was made from the center of approximately every third unit in addition to every fully-described unit, giving an approximate 30% sub-sample. In addition, the area of canopy was estimated ocularly into percentages of coniferous or hardwood trees.

9. Bank Composition and Vegetation:

Bank composition elements range from bedrock to bare soil. However, the stream banks are usually covered with grass, brush, or trees. These factors influence the ability of stream banks to withstand winter flows. In Jacoby Creek, the dominant composition type and the dominant vegetation type of both the right and left banks for each fully-described unit were selected from the habitat inventory form. Additionally, the percent of each bank covered by vegetation (including downed trees, logs, and rootwads) was estimated and recorded.

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10. Large Woody Debris Count:

Large woody debris (LWD) is an important component of fish habitat and an element in channel forming processes. In each habitat unit all pieces of LWD partially or entirely below the elevation of bankfull discharge are counted and recorded. The minimum size to be considered is twelve inches in diameter and six feet in length. The LWD count is presented by reach and is expressed as an average per 100 feet.

11. Average Bankfull Width:

Bankfull width can vary greatly in the course of a channel type stream reach. This is especially true in very long reaches. Bankfull width can be a factor in habitat components like canopy density, water temperature, and pool depths. Frequent measurements taken at riffle crests (velocity crossovers) are needed to accurately describe reach widths. At the first appropriate velocity crossover that occurs after the beginning of a new stream survey page (ten habitat units), bankfull width is measured and recorded in the appropriate header block of the page. These widths are presented as an average for the channel type reach.

BIOLOGICAL INVENTORY

Biological sampling during the stream inventory is used to determine fish species and their distribution in the stream. Fish presence was observed from the stream banks in Jacoby Creek. In addition, underwater observations were made at 23 sites and electrofishing was conducted at 10 sites using techniques discussed in the *California Salmonid Stream Habitat Restoration Manual*.

DATA ANALYSIS

Data from the habitat inventory form are entered into Stream Habitat 2.0.18, a Visual Basic data entry program developed by Karen Wilson, Pacific States Marine Fisheries Commission in conjunction with the California Department of Fish and Game. This program processes and summarizes the data, and produces the following ten tables:

- Riffle, Flatwater, and Pool Habitat Types
- Habitat Types and Measured Parameters
- Pool Types
- Maximum Residual Pool Depths by Habitat Types
- Mean Percent Cover by Habitat Type
- Dominant Substrates by Habitat Type
- Mean Percent Vegetative Cover for Entire Stream
- Fish Habitat Inventory Data Summary by Stream Reach (Table 8)
- Mean Percent Dominant Substrate / Dominant Vegetation Type for Entire Stream
- Mean Percent Shelter Cover Types for Entire Stream

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Graphics are produced from the tables using Microsoft Excel. Graphics developed for Jacoby Creek include:

- Riffle, Flatwater, Pool Habitat Types by Percent Occurrence
- Riffle, Flatwater, Pool Habitat Types by Total Length
- Total Habitat Types by Percent Occurrence
- Pool Types by Percent Occurrence
- Maximum Residual Depth in Pools
- Percent Embeddedness
- Mean Percent Cover Types in Pools
- Substrate Composition in Pool Tail-outs
- Mean Percent Canopy
- Dominant Bank Composition by Composition Type
- Dominant Bank Vegetation by Vegetation Type

HABITAT INVENTORY RESULTS

* ALL TABLES AND GRAPHS ARE LOCATED AT THE END OF THE REPORT *

The habitat inventory of June 3 to July 16, 2008, was conducted by E. Hicks, J. Braren, C. Chavez, and N. VanVleet (WSP). The total length of the stream surveyed was 49,228 feet with an additional 708 feet of side channel.

Stream flow was measured near the bottom of the survey reach with a Marsh-McBirney Model 2000 flowmeter at 3.35 cfs on June 4, 2008.

Jacoby Creek is a C4 channel type for 7,251 feet of the stream surveyed (Reach 1), an F4 channel type for 10,323 feet of the stream surveyed (Reach 2), a C3 channel type for 8,142 feet of the stream surveyed (Reach 3), a G2 channel type for 12,383 feet of the stream surveyed (Reach 4), and an F4 channel type for 11,837 feet of the stream surveyed (Reach 5). C4 channels are meandering point-bar, riffle/pool, alluvial channels with broad well defined floodplain on low gradients and gravel -dominant substrates. F4 channel types are entrenched meandering riffle/pool channels on low gradients with high width/depth ratios and gravel-dominant substrates. C3 channels are meandering point-bar, riffle/pool, alluvial channels with broad well defined floodplain on low gradients and cobble-dominant substrates. G2 channels are entrenched “gully” step-pool channels on moderate gradients with low width /depth ratios and boulder-dominant substrates.

Water temperatures taken during the survey period ranged from 50 to 62 degrees Fahrenheit. Air temperatures ranged from 49 to 72 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of occurrence there were 38% pool unit, 32% riffle units, and 30% flatwater units (Graph 1). Based

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on total length of Level II habitat types there were 39% flatwater units, 36% pool units, 22% riffle units, and 2% no survey units (Graph 2).

Eighteen Level IV habitat types were identified (Table 2). The most frequent habitat types by percent occurrence were mid-channel pool units, 30%; low gradient riffle units, 22%; and run units, 18% (Graph 3). Based on percent total length, mid-channel pool units made up 32%, run units 20%, and step run units 18%.

A total of 270 pools were identified (Table 3). Main channel pools were the most frequently encountered at 84% (Graph 4), and comprised 93% of the total length of all pools (Table 3).

Table 4 is a summary of maximum residual pool depths by pool habitat types. Pool quality for salmonids increases with depth. Fifty-one of the 270 pools (19%) had a residual depth of three feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 270 pool tail-outs measured, 61 had a value of 1 (22.6%); 183 had a value of 2 (67.8%); 14 had a value of 3 (5.2%); 12 had a value of 5 (4.4%) (Graph 6). On this scale, a value of 1 indicates the best spawning conditions and a value of 4 the worst. Additionally, a value of 5 was assigned to tail-outs deemed unsuited for spawning due to inappropriate substrate such as bedrock, log sills, boulders, or other considerations.

A shelter rating was calculated for each habitat unit and expressed as a mean value for each habitat type within the survey using a scale of 0-300. Riffle habitat types had a mean shelter rating of 30, flatwater habitat types had a mean shelter rating of 27, and pool habitats had a mean shelter rating of 42 (Table 1). Of the pool types, scour pools had the highest mean shelter rating at 60. Main channel pools had a mean shelter rating of 39 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Boulders are the dominant cover type in Jacoby Creek. Graph 7 describes the pool cover in Jacoby Creek. Boulders are the dominant pool cover type followed by small woody debris.

Table 6 summarizes the dominant substrate by habitat type. Graph 8 depicts the dominant substrate observed in pool tail-outs. Gravel was the dominant substrate observed in 65% of the pool tail-outs. Small cobble was the next most frequently observed dominant substrate type and occurred in 26% of the pool tail-outs.

The mean percent canopy density for the surveyed length of Jacoby Creek was 87%. Thirteen percent of the canopy was open. Of the canopy present, the mean percentages of hardwood and coniferous trees were 77% and 23%, respectively. Graph 9 describes the mean percent canopy in Jacoby Creek.

For the stream reach surveyed, the mean percent right bank vegetated was 99%. The mean percent left bank vegetated was 99%. The dominant elements composing the structure of the stream banks consisted of 40% sand/silt/clay, 32% cobble/gravel, 20% boulder, and 8% bedrock (Graph 10). Deciduous trees were the dominant vegetation type observed in 66% of the units

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surveyed. Additionally, 22% of the units surveyed had brush as the dominant vegetation type, and 8% had coniferous trees as the dominant vegetation type (Graph 11).

BIOLOGICAL INVENTORY RESULTS

Ten sites were electrofished for species composition and distribution in Jacoby Creek between July 3 and August 6, 2008. In addition, 23 sites were snorkel surveyed between September 22 and October 9, 2008. Water temperatures taken during the electrofishing and dive survey period ranged from 50 to 59 degrees Fahrenheit. Air temperatures ranged from 49 to 64 degrees Fahrenheit. The sites were sampled by A. Renger, I. Mikus, S. McSmith (DFG), M. Westersund, J. Braren, and B. Quagliari (WSP).

In reach 1, which comprised the first 7,251 feet of stream, 5 sites were sampled. The reach sites yielded 28 young-of-the-year steelhead/rainbow trout (SH/RT), 27 age 1+ SH/RT and 1 age 2+ SH/RT, 1 coho, 19 unidentified sculpin, and 3 three-spine stickleback.

In reach 2, 2 sites were sampled starting approximately 7,251 from the confluence with the Humboldt Bay and continuing upstream 10,323 feet. The reach sites yielded 6 young-of-the-year SH/RT, 15 age 1+ SH/RT, 2 age 2+ SH/RT, 6 coho, 3 unidentified sculpin, and 5 three-spine stickleback.

In reach 3, 5 sites were sampled starting approximately 17,574 from the confluence with the Humboldt Bay and continuing upstream 7,887 feet. The reach sites yielded 123 young-of-the-year SH/RT, 12 age 1+ SH/RT, 1 age 2+ SH/RT, 133 coho and 61 three-spine stickleback.

In reach 4, 11 sites were sampled starting approximately 25,716 from the confluence with the Humboldt Bay and continuing upstream 11,930 feet. The reach sites yielded 231 young-of-the-year SH/RT, 21 age 1+ SH/RT, 3 age 2+ SH/RT, and 50 coho.

In reach 5, 10 sites were sampled starting approximately 38,099 from the confluence with the Humboldt Bay and continuing upstream 11,837 feet. The reach sites yielded 59 young-of-the-year SH/RT, and 7 age 1+ SH/RT.

The following chart displays the information yielded from these sites:

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2008 Jacoby Creek electrofish/underwater observations.

Date	Site #	Hab. Unit #	Hab. Type	Approx. Dist. from mouth (ft.)	Coho		SH/RT		
					YOY	1+	YOY	1+	2+
Reach 1: C4 Channel Type									
07/03/08	1	26	5.2	2,036	0	0	10	4	0
07/03/08	2	28	4.2	2,135	1	0	2	4	1
07/03/08	3	57-58	4.2	3,622	0	0	0	4	0
07/03/08	4	75	5.5	4,681	0	0	7	5	0
07/03/08	5	98	4.2	7,004	0	0	9	10	0
Reach 2: F4 Channel Type									
07/03/08	6	119	4.2	8,581	1	0	2	10	2
08/06/98	7	197	4.2	15,627	1	0	4	3	0
Reach 3: C3 Channel Type									
08/06/98	8	220	4.2	17,829	4	0	0	2	0
10/09/08	9	239	4.2	19,033	46	0	52	0	0
10/09/08	10	246	4.2	19,206	41	0	37	3	1
08/06/08	11	322	4.2	24,437	1	0	5	6	0
10/09/08	12	334	4.2	25,305	45	0	29	3	0
Reach 4: G2 Channel Type									
08/06/08	13	340	4.2	25,623	2	0	5	0	0
09/22/08	14	361	4.2	27,380	16	0	38	0	0
09/22/08	15	383	4.2	30,132	20	0	30	5	1
09/22/08	16	398	5.6	29,638	12	0	18	4	0
09/22/08	17	415.05	4.2	32,091	0	0	14	0	0
09/22/08	18	416	3.3	31,856	0	0	11	4	0

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Date	Site #	Hab. Unit #	Hab. Type	Approx. Dist. from mouth (ft.)	Coho		SH/RT		
					YOY	1+	YOY	1+	2+
09/22/08	19	423	4.4	32,384	0	0	27	0	0
09/22/08	20	434	1.1	33,003	0	0	31	1	0
09/22/08	21	437	4.4	33,180	0	0	46	4	1
09/22/08	22	501	4.2	36,128	0	0	4	3	1
09/22/08	23	537	4.2	37,444	0	0	7	0	0
Reach 5: F4 Channel Type									
10/09/08	24	540	4.2	37,391	0	0	6	4	0
10/09/08	25	565	4.2	39,625	0	0	11	0	0
10/09/08	26	567	4.2	39,716	0	0	17	0	0
10/09/08	27	642	4.2	45,191	0	0	1	0	0
10/09/08	28	646	4.2	45,556	0	0	9	0	0
10/09/08	29	658	4.2	46,373	0	0	1	0	0
10/09/08	30	659	5.2	46,425	0	0	1	0	0
10/09/08	31	671	4.2	47,000	0	0	5	0	0
10/09/08	32	680	4.2	47,778	0	0	3	2	0
10/09/08	33	682	4.2	47,848	0	0	5	1	0

DISCUSSION

Jacoby Creek is a C4 channel type for the first 7,251 feet of stream surveyed and an F4 channel type for the next 10,323 feet and a C3 channel type for the next 8,142 and a G2 channel type for the next 12,383 feet and an F4 for the remaining 11,837 feet of stream surveyed. The suitability of C4, F4, C3, and G2 channel types for fish habitat improvement structures is as follows: C4 channel types are good for bank placed boulders and fair for plunge weirs, single and opposing wing-deflectors, channel constrictors, and log cover. F4 channel types are good for bank-placed boulders and fair for plunge weirs, single and opposing wing-deflectors, channel constrictors, and log cover. C3 channel types are excellent for bank-placed boulders and good for plunge

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weirs, boulder clusters, single and opposing wing-deflectors and log cover. G2 channel types are fair for log cover.

The water temperatures recorded on the survey days June 3 to July 16, 2008, ranged from 50 to 62 degrees Fahrenheit. Air temperatures ranged from 49 to 72 degrees Fahrenheit. To make any conclusions, temperatures would need to be monitored throughout the warm summer months, and more extensive biological sampling would need to be conducted.

Flatwater habitat types comprised 39% of the total length of this survey, riffles 22%, and pools 36%. The pools are relatively shallow, with 51 of the 270 (19%) pools having a maximum residual depth greater than 3 feet. In general, pool enhancement projects are considered when primary pools comprise less than 40% of the length of total stream habitat. In third order streams, a primary pool is defined to have a maximum residual depth of at least three feet, occupy at least half the width of the low flow channel, and be as long as the low flow channel width. Installing structures that will deepen pool habitat is recommended.

Two hundred forty-four of the 270 pool tail-outs measured had embeddedness ratings of 1 or 2. Fourteen of the pool tail-outs had embeddedness ratings of 3 or 4. Twelve of the pool tail-outs had a rating of 5, which is considered unsuitable for spawning. Cobble embeddedness measured to be 25% or less, a rating of 1, is considered to indicate good quality spawning substrate for salmon and steelhead.

Two hundred forty-four of the 270 pool tail-outs measured had gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids.

The mean shelter rating for pools was 42. The shelter rating in the flatwater habitats was 27. A pool shelter rating of approximately 100 is desirable. The amount of cover that now exists is being provided primarily by boulders in Jacoby Creek. Boulders are the dominant cover type in pools followed by small woody debris. Log and root wad cover structures in the pool and flatwater habitats would enhance both summer and winter salmonid habitat. Log cover structure provides rearing fry with protection from predation, rest from water velocity, and also divides territorial units to reduce density related competition.

The mean percent canopy density for the stream was 87%. Reach 1 had a canopy density of 88%, Reach 2 had a canopy density of 76%, Reach 3 had a canopy density of 85%, Reach 4 had a canopy density of 89%, and Reach 5 had a canopy density of 92%. In general, revegetation projects are considered when canopy density is less than 80%.

The percentage of right and left bank covered with vegetation was 99% and 99%, respectively. In areas of stream bank erosion or where bank vegetation is sparse, planting endemic species of coniferous and hardwood trees, in conjunction with bank stabilization, is recommended.

RECOMMENDATIONS

- 1) Jacoby Creek should be managed as an anadromous, natural production stream.

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- 2) The limited water temperature data available suggest that maximum temperatures are within the acceptable range for juvenile salmonids. To establish more complete and meaningful temperature regime information, 24-hour monitoring during the July and August temperature extreme period should be performed for 3 to 5 years.
- 3) Increase woody cover in the pools and flatwater habitat units. Most of the existing cover in the pools is from boulders. Adding high quality complexity with woody cover in the pools is desirable.

COMMENTS AND LANDMARKS

The following landmarks and possible problem sites were noted. All distances are approximate and taken from the beginning of the survey reach.

Position (ft):	Habitat unit #:	Comments:
0	0001.00	Start of survey on the upstream side of the north bound Highway 101 Bridge.
1573	0018.00	A channel type of C4 was taken at the bottom this of unit.
1718	0021.00	Log Debris Accumulation (LDA) #01, located at the top of the unit, contains 4 pieces of large woody debris (LWD) and measures 6' high x 25' wide x 6' long with water flowing through and no visible gaps.
2659	0037.00	LDA #02, located at the top of the unit, contains 4 pieces of LWD and measures 8' high x 25' wide x 15' long with water flowing through and no visible gaps.
3293	0047.00	LDA 003, located at the top of the unit and contains 4 pieces of LWD and measures 2' high X 20' wide x 6' long with water flowing through and visible gaps.
4938	0079.00	Bridge #01 (Old Arcata Rd. Bridge) is constructed of concrete and measures 38' wide x 6.6' high x 84' long.
5397	0082.00	There is rip rap on the left bank.
5761	0087.00	There is rip rap on the right and left banks of this unit.
6106	0089.00	There is rip rap on the left bank.
6480	0092.00	There is rip rap on the left bank.

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7251	0100.00	Reach 2 starts with the channel type change from C4 to F4.
7919	0107.00	There is rip rap on the left bank.
8046	0110.00	Bridge #02 is a private car bridge off of Graham Road constructed of concrete, steel, and wood, and measures 10' wide x 9' high x 39' long.
8066	0111.00	There is a road drainage pipe the flows to the creek.
8678	0121.00	There is a cattle exclusion fence running across the creek at the bottom of this unit. Cattle have access to the creek.
8839	0122.00	There is a cattle exclusion fence running across the creek at the middle of this unit.
8839	0122.00	Bridge #03 is a private car bridge off of Graham Road constructed of steel and wood, and measures 14' wide x 10' high x 73' long.
11891	0146.00	There is a dry drainage with a culvert originating from pasture land at the top of this unit.
12015	0149.00	LDA #04, located at the top of the unit, contains 10 pieces of LWD and measures 8' high X 30' wide x 25' long with water flowing through and visible gaps.
13047	0165.00	Tributary #01, located on the left bank, contributes less than 0.1% of the flow to Jacoby Creek. The temperature downstream of the confluence was 52 degrees Fahrenheit, the temperature of the tributary was 53 degrees Fahrenheit, and the temperature upstream of the confluence was 53 degrees Fahrenheit. The slope of the tributary was 3% and appears accessible to fish, though no fish were observed in the 40 feet explored.
14197	0180.00	Tributary #02, located on the right bank, contributes 5% of the flow to Jacoby Creek. The temperature downstream of the confluence was 52 degrees Fahrenheit, the temperature of the tributary was 54 degrees Fahrenheit, and the temperature upstream of the confluence was 56 degrees Fahrenheit. The slope of the tributary was 1% and fish were observed in the 100 feet explored.
15806	0199.00	Bridge #04 (Brookwood Dr. bridge) is a covered bridge constructed of concrete and wood and measures 23' wide x 11' high x 61' long.
17074	0212.00	There is a fence across the creek that allows horses to have access to the creek.

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17574	0217.00	Reach 3 begins with a channel type change from F4 to C3.
18886	0235.00	Bridge #05 is a seasonal foot bridge constructed of plywood and measures 4' wide x 2' high x 19' long.
18938	0237.00	Bridge #06 is a seasonal foot bridge constructed of wood that measures 2.5' wide x 1' high x 13' long.
19670	0250.00	Bridge #07 (South Quarry Rd. bridge) is a car bridge constructed of concrete and steel and measures 14' wide x 22.5' high x 103' long.
20132	0255.00	Tributary #03, located on the left bank, contributes 1% of the flow to Jacoby Creek. The temperature downstream of the confluence was 52 degrees Fahrenheit, the temperature of the tributary was 50 degrees Fahrenheit, and the temperature upstream of the confluence was 52 degrees Fahrenheit. The slope of the tributary was 7% and does not appear accessible to fish. No fish were observed in the 60 feet explored.
22352	0293.00	LDA #05, located at the top of the unit, contains 7 pieces of LWD and measures 8' high x 26' wide x 6' long with water flowing through and visible gaps.
25461	0337.00	Reach 4 starts with a change type change from C3 to G2.
25703	0341.00	Tributary #04, located on the right bank, contributes 1% of the flow to Jacoby Creek. The temperature downstream of the confluence was 54 degrees Fahrenheit, the temperature of the tributary was 52 degrees Fahrenheit, and the temperature upstream of the confluence was 54 degrees Fahrenheit. The slope of the tributary was 3% and appears accessible to fish, though no fish were observed in the 50 feet explored.
28133	0373.00	Tributary #05, located on the right bank, contributes 1% of the flow to Jacoby Creek. The temperature downstream of the confluence was 51 degrees Fahrenheit, the temperature of the tributary was 51 degrees Fahrenheit, and the temperature upstream of the confluence was 51 degrees Fahrenheit. The slope of the tributary was 14% and did not appear accessible to fish. No fish were observed in the 100 feet explored.
30830	0398.00	There is a waterfall with a 3.5' plunge. No coho were observed above this habitat unit. Steelhead were observed throughout the survey.
30946	0401.00	The stream gradient is 25%.
31750	0414.00	There is residence water diversion in this unit.

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31975	0419.00	There is a waterfall with a 1' plunge.
32275	0422.00	The stream gradient is 14%.
32414	0424.00	The stream gradient is 10%. LDA #06, located at the top of the unit, contains 19 pieces of LWD and measures 8' high x 23' wide x 20' long with water flowing through and visible gaps.
32508	0425.00	There is an erosion site on the left bank measuring 40' long x 25' wide.
32672	0428.00	There is an erosion site on the left bank measuring 25' long x 30' ft high.
32786	0430.00	There is a waterfall with a 4' plunge.
32834	0431.00	LDA #07, located at the top of the unit, contains 9 pieces of LWD and measures 9' high x 28' wide x 11' long with water flowing through and visible gaps.
33040	0435.00	LDA #08, located at the top of the unit, contains 20 pieces of LWD and measures 14' high x 55' wide x 34' long with water flowing through and no visible gaps. Sediment retention ranges from silt to small cobble and measures 55' wide x 34' long x 4' deep.
33692	0444.00	Tributary #06, located on the left bank, contributes 1% of the flow to Jacoby Creek. The temperature downstream of the confluence was 52 degrees Fahrenheit, the temperature of the tributary was 49 degrees Fahrenheit, and the temperature upstream of the confluence was 55 degrees Fahrenheit. The slope of the tributary was 17% and appears accessible to fish, though no fish were observed in the 40 feet explored.
34085	0452.00	Falls measure 2.8 feet.
34816	0470.00	There is a waterfall with a 3.8' plunge.
36156	0505.00	There is a waterfall with a 4.3' plunge.
36186	0506.00	The stream gradient is 30%.
36751	0522.00	There is a 4' plunge.
36790	0523.00	There is a waterfall with a 10' plunge.

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37176	0531.00	LDA #09, located at the top of the unit, contains 14 pieces of LWD and measures 7' high x 29' wide x 7' long with water flowing through and no visible gaps. Sediment retention ranges from sand to gravel and measures 14' wide x 11' long x 1' deep.
37211	0532.00	There is a waterfall with a 2' plunge.
37232	0533.00	There is a waterfall with a 3.5' plunge.
37,391	0539.00	Reach 5 starts with a channel type change from G2 to F4.
38870	0556.00	There is a 2.5' plunge.
41292	0585.00	There is a 4' plunge.
41473	0590.00	There is a 10' plunge.
41512	0592.00	LDA #10, located at the top of this habitat unit, contains 6 pieces of LWD and measures 8' high x 12' wide x 8' long with water flowing through and visible gaps.
41561	0593.00	There is a 2.5' plunge over a cement wall at the gaging station.
41612	0595.00	Tributary #07, located on the right bank, contributes 1% of the flow to Jacoby Creek. The temperature downstream of the confluence was 58 degrees Fahrenheit, the temperature of the tributary was 54 degrees Fahrenheit, and the temperature upstream of the confluence was 58 degrees Fahrenheit. It does not appear accessible to fish. No fish were observed in the 15 feet explored.
4162	596.00	Tributary #08, located on the right bank, contributes 1% of the flow to Jacoby Creek. The temperature downstream of the confluence was 58 degrees Fahrenheit, the temperature of the tributary was 54 degrees Fahrenheit, and the temperature upstream of the confluence was 58 degrees Fahrenheit. It does not appear accessible to fish, and no fish were observed in the 15 feet explored.
43547	0624.00	LDA #11, located at the top of the unit, contains 10 pieces of LWD and measures 5' high x 21' wide x 7' long with water flowing through and visible gaps. There was no sediment retention.
43650	0625.00	Tributary #09, located on the right bank, contributes 2% of the flow to Jacoby Creek. The temperature downstream of the confluence was 58 degrees Fahrenheit, the temperature of the tributary was 58 degrees Fahrenheit, and the temperature upstream of the confluence was 58

Jacoby Creek

degrees Fahrenheit. The slope of the tributary was 29% and does not appear accessible to fish. No fish were observed in the 20 feet explored.

45337	0644.00	LDA #12, located at the top of the unit, contains 6 pieces of LWD and measures 5' high x 34' wide x 14' long with water flowing through and visible gaps.
46613	0663.00	Tributary #10, located on the left bank, contributes 1% of the flow to Jacoby Creek. The temperature downstream of the confluence was 55 degrees Fahrenheit, the temperature of the tributary was 52 degrees Fahrenheit, and the temperature upstream of the confluence was 56 degrees Fahrenheit. The slope of the tributary was 6% and does not appear accessible to fish. No fish were observed in the 20 feet explored.
47030	0672.00	Tributary #11, located on the left bank, contributes 1% of the flow to Jacoby Creek. The temperature downstream of the confluence was 55 degrees Fahrenheit, the temperature of the tributary was 52 degrees Fahrenheit, and the temperature upstream of the confluence was 56 degrees Fahrenheit. The slope of the tributary was 9% and does not appear accessible to fish. No fish were observed in the 20 feet explored.
47210	0673.00	There is an erosion site on the left bank measuring 20' wide x 40' high.
47210	0673.00	LDA #13, located at the top of the unit, contains 5 pieces of LWD and measures 6' high x 11' wide x 13' long with water flowing through and visible gaps.
47245	0674.00	LDA #14, located at the top of the unit, contains 7 pieces of LWD and measures 4' high x 26' wide x 20' long with water flowing through and no visible gaps. Sediment retention ranges from silt to sand and measures 5' wide x 7' wide x 1' deep.
47590	0678.00	LDA #15, located at the top of the unit, contains 7 pieces of LWD and measures 5' high x 35' wide x 15' long with water flowing through and visible gaps.
47778	0680.00	Tributary #12, located on the right bank, contributes 1% of the flow to Jacoby Creek. The temperature downstream of the confluence was 51 degrees Fahrenheit, the temperature of the tributary was 49 degrees Fahrenheit, and the temperature upstream of the confluence was 55 degrees Fahrenheit. The slope of the tributary was 8% and does not appear accessible to fish. No fish were observed in the 20 feet explored.
48218	0685.00	LDA #16, located at the top of the unit, contains 21 pieces of LWD and measures 13' high x 47' wide x 94' long with water flowing through and visible gaps.

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- 48313 0687.00 LDA #17, located at the top of the unit, contains 10 pieces of LWD and measures 7' high x 25' wide x 30' long with water flowing through and no visible gaps. Sediment retention ranges from silt to gravel and measures 6' wide x 3' long x 2' deep.
- 48358 0688.00 Tributary #12, located on the left bank, contributes 3% of the flow to Jacoby Creek. The temperature downstream of the confluence was 51 degrees Fahrenheit, the temperature of the tributary was 54 degrees Fahrenheit, and the temperature upstream of the confluence was 50 degrees Fahrenheit. The slope of the tributary was 11% and does not appear accessible to fish. No fish were observed in the 100 feet explored.
- 49936 0700.00 End of survey due to lack of land access permission.

REFERENCES

Flosi, G., Downie, S., Hopelain, J., Bird, M., Coey, R., and Collins, B. 1998. *California Salmonid Stream Habitat Restoration Manual*, 3rd edition. California Department of Fish and Game, Sacramento, California.

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LEVEL III and LEVEL IV HABITAT TYPES

RIFFLE

Low Gradient Riffle	(LGR)	[1.1]	{ 1 }
High Gradient Riffle	(HGR)	[1.2]	{ 2 }

CASCADE

Cascade	(CAS)	[2.1]	{ 3 }
Bedrock Sheet	(BRS)	[2.2]	{24}

FLATWATER

Pocket Water	(POW)	[3.1]	{21}
Glide	(GLD)	[3.2]	{14}
Run	(RUN)	[3.3]	{15}
Step Run	(SRN)	[3.4]	{16}
Edgewater	(EDW)	[3.5]	{18}

MAIN CHANNEL POOLS

Trench Pool	(TRP)	[4.1]	{ 8 }
Mid-Channel Pool	(MCP)	[4.2]	{17}
Channel Confluence Pool	(CCP)	[4.3]	{19}
Step Pool	(STP)	[4.4]	{23}

SCOUR POOLS

Corner Pool	(CRP)	[5.1]	{22}
Lateral Scour Pool - Log Enhanced	(LSL)	[5.2]	{10}
Lateral Scour Pool - Root Wad Enhanced	(LSR)	[5.3]	{11}
Lateral Scour Pool - Bedrock Formed	(LSBk)	[5.4]	{12}
Lateral Scour Pool - Boulder Formed	(LSBo)	[5.5]	{20}
Plunge Pool	(PLP)	[5.6]	{ 9 }

BACKWATER POOLS

Secondary Channel Pool	(SCP)	[6.1]	{ 4 }
Backwater Pool - Boulder Formed	(BPB)	[6.2]	{ 5 }
Backwater Pool - Root Wad Formed	(BPR)	[6.3]	{ 6 }
Backwater Pool - Log Formed	(BPL)	[6.4]	{ 7 }
Dammed Pool	(DPL)	[6.5]	{13}

ADDITIONAL UNIT DESIGNATIONS

Dry	(DRY)	[7.0]	
Culvert	(CUL)	[8.0]	
Not Surveyed	(NS)	[9.0]	
Not Surveyed due to a marsh	(MAR)	[9.1]	

Table 1 - Summary of Riffle, Flatwater, and Pool Habitat Types

Stream Name: Jacoby Creek

LLID: 1240814408436

Drainage: Eureka Plain

Survey Dates: 6/3/2008 to 7/16/2008

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T000R000S00

Latitude: 40:50:37.0N

Longitude: 124:04:53.0

Habitat Units	Units Fully Measured	Habitat Type	Habitat Occurrence (%)	Mean Length (ft.)	Total Length (ft.)	Total Length (%)	Mean Width (ft.)	Mean Depth (ft.)	Mean Max Depth (ft.)	Mean Area (sq.ft.)	Estimated Total Area (sq.ft.)	Mean Volume (cu.ft.)	Estimated Total Volume (cu.ft.)	Mean Residual Pool Vol (cu.ft.)	Mean Shelter Rating
2	0	DRY	0.3	102	204	0.4									
214	44	FLATWATER	29.9	92	19600	39.3	14.6	0.7	1.3	1055	225707	723	151223		27
2	0	NOSURVEY	0.3	512	1023	2.0									
270	270	POOL	37.8	67	18060	36.2	18.0	1.0	2.2	1247	336746	2156	582009	1539	42
227	36	RIFFLE	31.7	49	11049	22.1	16.1	0.5	1.1	410	93013	225	50982		30
Total Units	Total Units Fully Measured				Total Length (ft.)					Total Area (sq.ft.)			Total Volume (cu.ft.)		
715	350				49936					655465			784215		

Table 2 - Summary of Habitat Types and Measured Parameters

Stream Name: Jacoby Creek

LLID: 1240814408436

Drainage: Eureka Plain

Survey Dates: 6/3/2008 to 7/16/2008

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T000R000S00

Latitude: 40:50:37.0N

Longitude: 124:04:53.0W

Habitat Units	Units Fully Measured	Habitat Type	Habitat Occurrence (%)	Mean Length (ft.)	Total Length (ft.)	Total Length (%)	Mean Width (ft.)	Mean Depth (ft.)	Max Depth (ft.)	Mean Area (sq.ft.)	Estimated Total Area (sq.ft.)	Mean Volume (cu.ft.)	Estimated Total Volume (cu.ft.)	Mean Residual Pool Vol (cu.ft.)	Mean Shelter Rating	Mean Canopy (%)
158	28	LGR	22.1	53	8297	16.6	15	0.5	1.5	418	65977	203	32110		23	89
51	5	HGR	7.1	39	2001	4.0	17	0.5	1.8	366	18674	187	9550		43	90
17	2	CAS	2.4	42	712	1.4	22	0.8	1.5	307	5217	238	4044		48	85
1	1	BRS	0.1	39	39	0.1	35	1.6	3.3	614	614	983	983		60	73
6	1	POW	0.8	40	238	0.5	15	0.7	1	552	3312	386	2318		20	84
2	1	GLD	0.3	190	380	0.8	12	1.0	1.6	468	936	468	936		20	35
128	31	RUN	17.9	78	9980	20.0	16	0.7	2.5	1101	140984	751	93055		30	89
78	11	SRN	10.9	115	9002	18.0	12	0.7	2.1	1022	79720	700	54610		21	88
211	211	MCP	29.5	75	15798	31.6	18	1.1	5.5	1430	301652	2534	534570	1845	38	85
3	3	CCP	0.4	71	213	0.4	21	1.4	2.9	1273	3820	2771	8312	1993	48	84
14	14	STP	2.0	54	756	1.5	15	0.5	4.5	639	8941	736	10306	309	54	91
16	16	LSL	2.2	36	577	1.2	20	0.7	3.5	735	11758	963	15405	607	58	88
4	4	LSR	0.6	52	209	0.4	15	0.4	2.1	784	3136	755	3019	320	29	90
3	3	LSBo	0.4	26	79	0.2	17	0.5	2.8	389	1166	378	1135	211	23	95
16	16	PLP	2.2	23	362	0.7	16	0.8	3	327	5230	497	7958	308	74	90
1	1	SCP	0.1	6	6	0.0	3	0.1		14	14	6	6	1	1	98
2	2	DPL	0.3	30	60	0.1	14	0.5	1.7	514	1028	649	1298	373	53	91
2	0	DRY	0.3	102	204	0.4										
2	0	NS	0.3	512	1023	2.0										

Total Units
715

Total Units Fully Measured
350

Total Length (ft.)
49936

Total Area (sq.ft.)
652179

Total Volume (cu.ft.)
779616

Table 3 - Summary of Pool Types

Stream Name: Jacoby Creek

LLID: 1240814408436

Drainage: Eureka Plain

Survey Dates: 6/3/2008 to 7/16/2008

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T000R000S00

Latitude: 40:50:37.0N

Longitude: 124:04:53.0W

Habitat Units	Units Fully Measured	Habitat Type	Habitat Occurrence (%)	Mean Length (ft.)	Total Length (ft.)	Total Length (%)	Mean Width (ft.)	Mean Residual Depth (ft.)	Mean Area (sq.ft.)	Estimated Total Area (sq.ft.)	Mean Residual Pool Vol (cu.ft.)	Estimated Total Resid.Vol. (cu.ft.)	Mean Shelter Rating
228	228	MAIN	84	74	16767	93	18.1	1.1	1379	314412	1751	390453	39
39	39	SCOUR	14	31	1227	7	17.8	0.7	546	21291	425	16557	60
3	3	BACKWATER	1	22	66	0	10.7	0.4	348	1043	249	747	35
Total Units	Total Units Fully Measured				Total Length (ft.)				Total Area (sq.ft.)			Total Volume (cu.ft.)	
270	270				18060				336746			407758	

Table 4 - Summary of Maximum Residual Pool Depths By Pool Habitat Types

Stream Name: Jacoby Creek

LLID: 1240814408436

Drainage: Eureka Plain

Survey Dates: 6/3/2008 to 7/16/2008

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T000R000S00

Latitude: 40:50:37.0N

Longitude: 124:04:53.0W

Habitat Units	Habitat Type	Habitat Occurrence (%)	< 1 Foot Maximum Residual Depth	< 1 Foot Percent Occurrence	1 < 2 Feet Maximum Residual Depth	1 < 2 Feet Percent Occurrence	2 < 3 Feet Maximum Residual Depth	2 < 3 Feet Percent Occurrence	3 < 4 Feet Maximum Residual Depth	3 < 4 Feet Percent Occurrence	>= 4 Feet Maximum Residual Depth	>= 4 Feet Percent Occurrence
211	MCP	78	9	4	86	41	70	33	30	14	16	8
3	CCP	1	0	0	1	33	2	67	0	0	0	0
14	STP	5	1	7	7	50	4	29	1	7	1	7
16	LSL	6	1	6	9	56	5	31	1	6	0	0
4	LSR	1	1	25	2	50	1	25	0	0	0	0
3	LSBo	1	0	0	2	67	1	33	0	0	0	0
16	PLP	6	0	0	7	44	7	44	2	13	0	0
1	SCP	0	1	100	0	0	0	0	0	0	0	0
2	DPL	1	1	50	1	50	0	0	0	0	0	0
Total Units			Total < 1 Foot Max Resid. Depth	Total < 1 Foot % Occurrence	Total 1< 2 Foot Max Resid. Depth	Total 1< 2 Foot % Occurrence	Total 2< 3 Foot Max Resid. Depth	Total 2< 3 Foot % Occurrence	Total 3< 4 Foot Max Resid. Depth	Total 3< 4 Foot % Occurrence	Total >= 4 Foot Max Resid. Depth	Total >= 4 Foot % Occurrence
270			14	5	115	43	90	33	34	13	17	6

Mean Maximum Residual Pool Depth (ft.): 2.2

Table 5 - Summary of Mean Percent Cover By Habitat Type

Stream Name: Jacoby Creek

LLID: 1240814408436

Drainage: Eureka Plain

Survey Dates: 6/3/2008 to 7/16/2008

Dry Units: 2

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T000R000S00

Latitude: 40:50:37.0N

Longitude: 124:04:53.0W

Habitat Units	Units Fully Measured	Habitat Type	Mean % Undercut Banks	Mean % SWD	Mean % LWD	Mean % Root Mass	Mean % Terr. Vegetation	Mean % Aquatic Vegetation	Mean % White Water	Mean % Boulders	Mean % Bedrock Ledges
158	18	LGR	4	12	1	7	50	0	12	14	0
51	5	HGR	0	18	6	0	0	0	8	68	0
17	2	CAS	0	0	10	0	0	0	50	40	0
1	1	BRS	0	10	0	0	0	0	30	60	0
227	26	TOTAL RIFFLE	3	13	2	5	36	0	13	28	0
6	1	POW	0	40	0	0	20	0	0	40	0
2	1	GLD	60	0	0	10	0	0	0	30	0
128	19	RUN	3	29	9	16	28	0	1	13	0
78	11	SRN	5	10	17	5	20	0	3	40	0
214	32	TOTAL FLAT	5	22	12	11	24	0	1	24	0
211	211	MCP	6	23	11	13	18	0	2	20	7
3	3	CCP	0	27	0	7	12	0	3	52	0
14	14	STP	0	2	13	1	1	0	15	70	0
16	16	LSL	1	27	56	4	11	1	0	0	0
4	4	LSR	15	26	6	38	15	0	0	0	0
3	2	LSBo	0	18	23	0	0	0	0	60	0
16	16	PLP	0	4	6	1	0	0	28	60	2
1	1	SCP	0	0	0	0	0	0	0	100	0
2	2	DPL	20	15	40	20	0	0	0	5	0
270	269	TOTAL POOL	5	21	14	11	15	0	4	24	6
2	0	NS									
715	327	TOTAL	5	20	13	11	17	0	4	24	5

Table 6 - Summary of Dominant Substrates By Habitat Type

Stream Name: Jacoby Creek

LLID: 1240814408436

Drainage: Eureka Plain

Survey Dates: 6/3/2008 to 7/16/2008

Dry Units: 2

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T000R000S00

Latitude: 40:50:37.0N

Longitude: 124:04:53.0W

Habitat Units	Units Fully Measured	Habitat Type	% Total Silt/Clay Dominant	% Total Sand Dominant	% Total Gravel Dominant	% Total Small Cobble Dominant	% Total Large Cobble Dominant	% Total Boulder Dominant	% Total Bedrock Dominant
158	18	LGR	0	6	44	28	0	22	0
51	5	HGR	0	0	0	0	40	60	0
17	2	CAS	0	0	0	50	0	50	0
1	1	BRS	0	0	0	0	0	100	0
6	1	POW	0	0	0	0	0	100	0
2	1	GLD	0	0	0	0	100	0	0
128	16	RUN	19	6	25	31	6	13	0
78	11	SRN	0	0	18	36	0	45	0
211	210	MCP	8	51	24	9	1	6	0
3	3	CCP	0	100	0	0	0	0	0
14	14	STP	0	29	0	0	0	71	0
16	16	LSL	0	19	63	19	0	0	0
4	4	LSR	0	0	75	25	0	0	0
3	2	LSBo	0	100	0	0	0	0	0
16	15	PLP	0	27	13	0	0	60	0
1	1	SCP	0	0	0	0	100	0	0
2	2	DPL	50	50	0	0	0	0	0

Table 7 - Summary of Mean Percent Canopy for Entire Stream

Stream Name: Jacoby Creek

LLID: 1240814408436

Drainage: Eureka Plain

Survey Dates: 6/3/2008 to 7/16/2008

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T000R000S00

Latitude: 40:50:37.0N

Longitude: 124:04:53.0W

Mean Percent Canopy	Mean Percent Conifer	Mean Percent Hardwood	Mean Percent Open Units	Mean Right Bank % Cover	Mean Left Bank % Cover
87	23	77	0	99	99

Note: Mean percent conifer and hardwood for the entire reach are means of canopy components from units with canopy values greater than zero.

Open units represent habitat units with zero canopy cover.

Table 8 - Fish Habitat Inventory Data Summary

Stream Name: Jacoby Creek LLID: 1240814408436 Drainage: Eureka Plain
 Survey Dates: 6/3/2008 to 7/16/2008 Survey Length (ft.): 49936 Main Channel (ft.): 49228 Side Channel (ft.): 708
 Confluence Location: Quad: ARCATA SOUTH Legal Description: T000R000S00 Latitude: 40:50:37.0N Longitude: 124:04:53.0W

Summary of Fish Habitat Elements By Stream Reach

STREAM REACH: 1

Channel Type: C4	Canopy Density (%): 88.9	Pools by Stream Length (%): 57.4
Reach Length (ft.): 7251	Coniferous Component (%): 1.5	Pool Frequency (%): 52.5
Riffle/Flatwater Mean Width (ft.): 14.9	Hardwood Component (%): 98.5	Residual Pool Depth (%):
BFW:	Dominant Bank Vegetation: Hardwood Trees	< 2 Feet Deep: 62
Range (ft.): 21 to 40	Vegetative Cover (%): 99.7	2 to 2.9 Feet Deep: 25
Mean (ft.): 27	Dominant Shelter: Small Woody Debris	3 to 3.9 Feet Deep: 4
Std. Dev.: 5	Dominant Bank Substrate Type: Sand/Silt/Clay	>= 4 Feet Deep: 10
Base Flow (cfs.): 3.4	Occurrence of LWD (%): 4	Mean Max Residual Pool Depth (ft.): 2.0
Water (F): 52 - 57 Air (F): 51 - 60	LWD per 100 ft.:	Mean Pool Shelter Rating: 49
Dry Channel (ft): 0	Riffles: 1	
	Pools: 1	
	Flat: 0	
Pool Tail Substrate (%): Silt/Clay: 0 Sand: 0 Gravel: 100 Sm Cobble: 0 Lg Cobble: 0 Boulder: 0 Bedrock: 0		
Embeddedness Values (%): 1. 13.5 2. 75.0 3. 9.6 4. 0.0 5. 1.9		

STREAM REACH: 2

Channel Type: F4	Canopy Density (%): 76.6	Pools by Stream Length (%): 56.5
Reach Length (ft.): 10323	Coniferous Component (%): 6.8	Pool Frequency (%): 44.4
Riffle/Flatwater Mean Width (ft.): 19.3	Hardwood Component (%): 93.2	Residual Pool Depth (%):
BFW:	Dominant Bank Vegetation: Hardwood Trees	< 2 Feet Deep: 37
Range (ft.): 32 to 45	Vegetative Cover (%): 99.1	2 to 2.9 Feet Deep: 40
Mean (ft.): 37	Dominant Shelter: Root masses	3 to 3.9 Feet Deep: 19
Std. Dev.: 4	Dominant Bank Substrate Type: Sand/Silt/Clay	>= 4 Feet Deep: 4
Base Flow (cfs.): 3.4	Occurrence of LWD (%): 9	Mean Max Residual Pool Depth (ft.): 2.4
Water (F): 52 - 58 Air (F): 50 - 58	LWD per 100 ft.:	Mean Pool Shelter Rating: 36
Dry Channel (ft): 0	Riffles: 0	
	Pools: 1	
	Flat: 0	
Pool Tail Substrate (%): Silt/Clay: 0 Sand: 0 Gravel: 77 Sm Cobble: 23 Lg Cobble: 0 Boulder: 0 Bedrock: 0		
Embeddedness Values (%): 1. 3.8 2. 82.7 3. 13.5 4. 0.0 5. 0.0		

Summary of Fish Habitat Elements By Stream Reach

STREAM REACH: 3

Channel Type: C3	Canopy Density (%): 85.2	Pools by Stream Length (%): 42.8
Reach Length (ft.): 7887	Coniferous Component (%): 26.5	Pool Frequency (%): 38.0
Riffle/Flatwater Mean Width (ft.): 15.5	Hardwood Component (%): 73.5	Residual Pool Depth (%):
BFW:	Dominant Bank Vegetation: Hardwood Trees	< 2 Feet Deep: 35
Range (ft.): 29 to 53	Vegetative Cover (%): 99.4	2 to 2.9 Feet Deep: 22
Mean (ft.): 38	Dominant Shelter: Small Woody Debris	3 to 3.9 Feet Deep: 26
Std. Dev.: 7	Dominant Bank Substrate Type: Sand/Silt/Clay	>= 4 Feet Deep: 17
Base Flow (cfs.): 3.4	Occurrence of LWD (%): 12	Mean Max Residual Pool Depth (ft.): 2.7
Water (F): 50 - 56 Air (F): 49 - 62	LWD per 100 ft.:	Mean Pool Shelter Rating: 26
Dry Channel (ft): 187	Riffles: 0	
	Pools: 1	
	Flat: 0	
Pool Tail Substrate (%): Silt/Clay: 0 Sand: 0 Gravel: 26 Sm Cobble: 72 Lg Cobble: 2 Boulder: 0 Bedrock: 0		
Embeddedness Values (%): 1. 4.3 2. 95.7 3. 0.0 4. 0.0 5. 0.0		

STREAM REACH: 4

Channel Type: G2	Canopy Density (%): 89.1	Pools by Stream Length (%): 18.8
Reach Length (ft.): 11930	Coniferous Component (%): 42.9	Pool Frequency (%): 29.2
Riffle/Flatwater Mean Width (ft.): 14.3	Hardwood Component (%): 57.1	Residual Pool Depth (%):
BFW:	Dominant Bank Vegetation: Hardwood Trees	< 2 Feet Deep: 57
Range (ft.): 25 to 56	Vegetative Cover (%): 98.8	2 to 2.9 Feet Deep: 33
Mean (ft.): 38	Dominant Shelter: Boulders	3 to 3.9 Feet Deep: 10
Std. Dev.: 8	Dominant Bank Substrate Type: Boulder	>= 4 Feet Deep: 0
Base Flow (cfs.): 3.4	Occurrence of LWD (%): 6	Mean Max Residual Pool Depth (ft.): 2.0
Water (F): 50 - 60 Air (F): 53 - 64	LWD per 100 ft.:	Mean Pool Shelter Rating: 49
Dry Channel (ft): 17	Riffles: 4	
	Pools: 3	
	Flat: 1	
Pool Tail Substrate (%): Silt/Clay: 2 Sand: 2 Gravel: 51 Sm Cobble: 14 Lg Cobble: 10 Boulder: 19 Bedrock: 3		
Embeddedness Values (%): 1. 20.6 2. 61.9 3. 3.2 4. 0.0 5. 14.3		

Summary of Fish Habitat Elements By Stream Reach

STREAM REACH: 5

Channel Type: F4	Canopy Density (%): 92.2	Pools by Stream Length (%): 19.1
Reach Length (ft.): 11837	Coniferous Component (%): 33.5	Pool Frequency (%): 35.2
Riffle/Flatwater Mean Width (ft.): 16.9	Hardwood Component (%): 66.5	Residual Pool Depth (%):
BFW:	Dominant Bank Vegetation: Brush	< 2 Feet Deep: 46
Range (ft.): 21 to 37	Vegetative Cover (%): 98.4	2 to 2.9 Feet Deep: 44
Mean (ft.): 28	Dominant Shelter: Large Woody Debris	3 to 3.9 Feet Deep: 7
Std. Dev.: 5	Dominant Bank Substrate Type: Cobble/Gravel	>= 4 Feet Deep: 4
Base Flow (cfs.): 3.4	Occurrence of LWD (%): 34	Mean Max Residual Pool Depth (ft.): 2.1
Water (F): 51 - 62 Air (F): 53 - 72	LWD per 100 ft.:	Mean Pool Shelter Rating: 49
Dry Channel (ft): 0	Riffles: 2	
	Pools: 7	
	Flat: 3	
Pool Tail Substrate (%): Silt/Clay: 0 Sand: 2 Gravel: 68 Sm Cobble: 26 Lg Cobble: 2 Boulder: 0 Bedrock: 2		
Embeddedness Values (%): 1. 64.9 2. 31.6 3. 0.0 4. 0.0 5. 3.5		

Table 9 - Mean Percentage of Dominant Substrate and Vegetation

Stream Name: Jacoby Creek

LLID: 1240814408436

Drainage: Eureka Plain

Survey Dates: 6/3/2008 to 7/16/2008

Confluence Location: Quad: ARCATA SOUTH

Legal Description: T000R000S00

Latitude: 40:50:37.0N

Longitude: 124:04:53.0W

Mean Percentage of Dominant Stream Bank Substrate

Dominant Class of Substrate	Number of Units Right Bank	Number of Units Left Bank	Total Mean Percent (%)
Bedrock	24	25	7.5
Boulder	70	62	20.3
Cobble / Gravel	100	108	32.0
Sand / Silt / Clay	131	130	40.2

Mean Percentage of Dominant Stream Bank Vegetation

Dominant Class of Vegetation	Number of Units Right Bank	Number of Units Left Bank	Total Mean Percent (%)
Grass	18	13	4.8
Brush	67	75	21.8
Hardwood Trees	216	210	65.5
Coniferous Trees	22	27	7.5
No Vegetation	2	0	0.3

Total Stream Cobble Embeddedness Values: 2

Table 10 - Mean Percent of Shelter Cover Types For Entire Stream

StreamName: Jacoby Creek

LLID: 1240814408436

Drainage: Eureka Plain

Survey Dates: 6/3/2008 to 7/16/2008

Confluence Location: Quad: ARCATA SOUTH

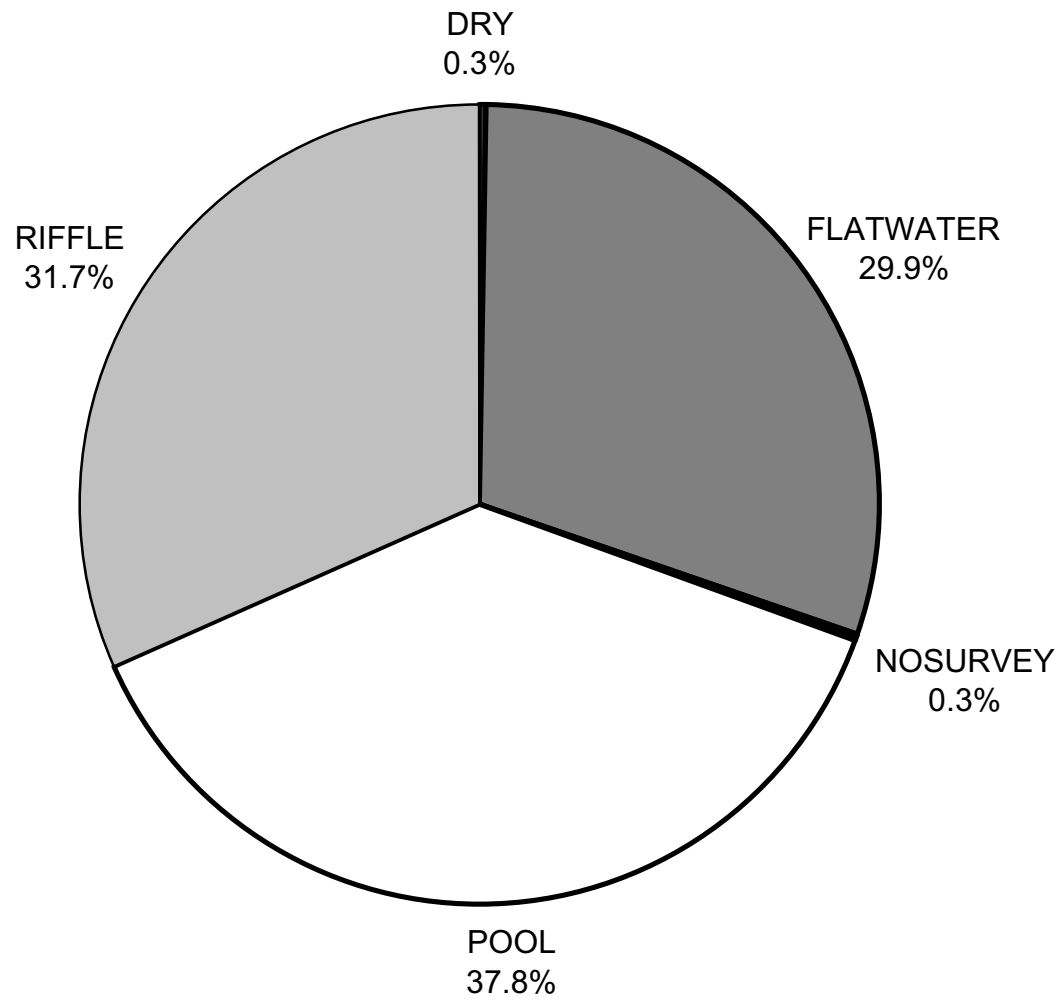
Legal Description: T000R000S00

Latitude: 40:50:37.0N

Longitude: 124:04:53.0W

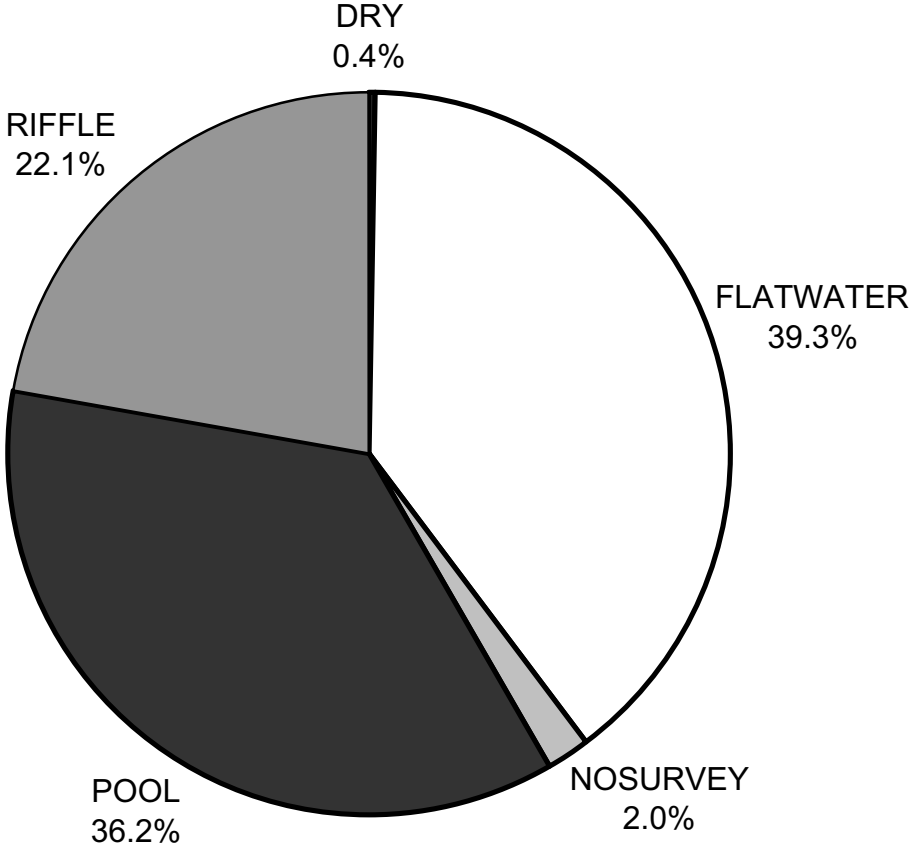
	Riffles	Flatwater	Pools
UNDERCUT BANKS (%)	3	5	5
SMALL WOODY DEBRIS (%)	13	22	21
LARGE WOODY DEBRIS (%)	2	12	14
ROOT MASS (%)	5	11	11
TERRESTRIAL VEGETATION (%)	36	24	15
AQUATIC VEGETATION (%)	0	0	0
WHITEWATER (%)	13	1	4
BOULDERS (%)	28	24	24
BEDROCK LEDGES (%)	0	0	6

JACOBY CREEK 2008 HABITAT TYPES BY PERCENT OCCURRENCE



GRAPH 1

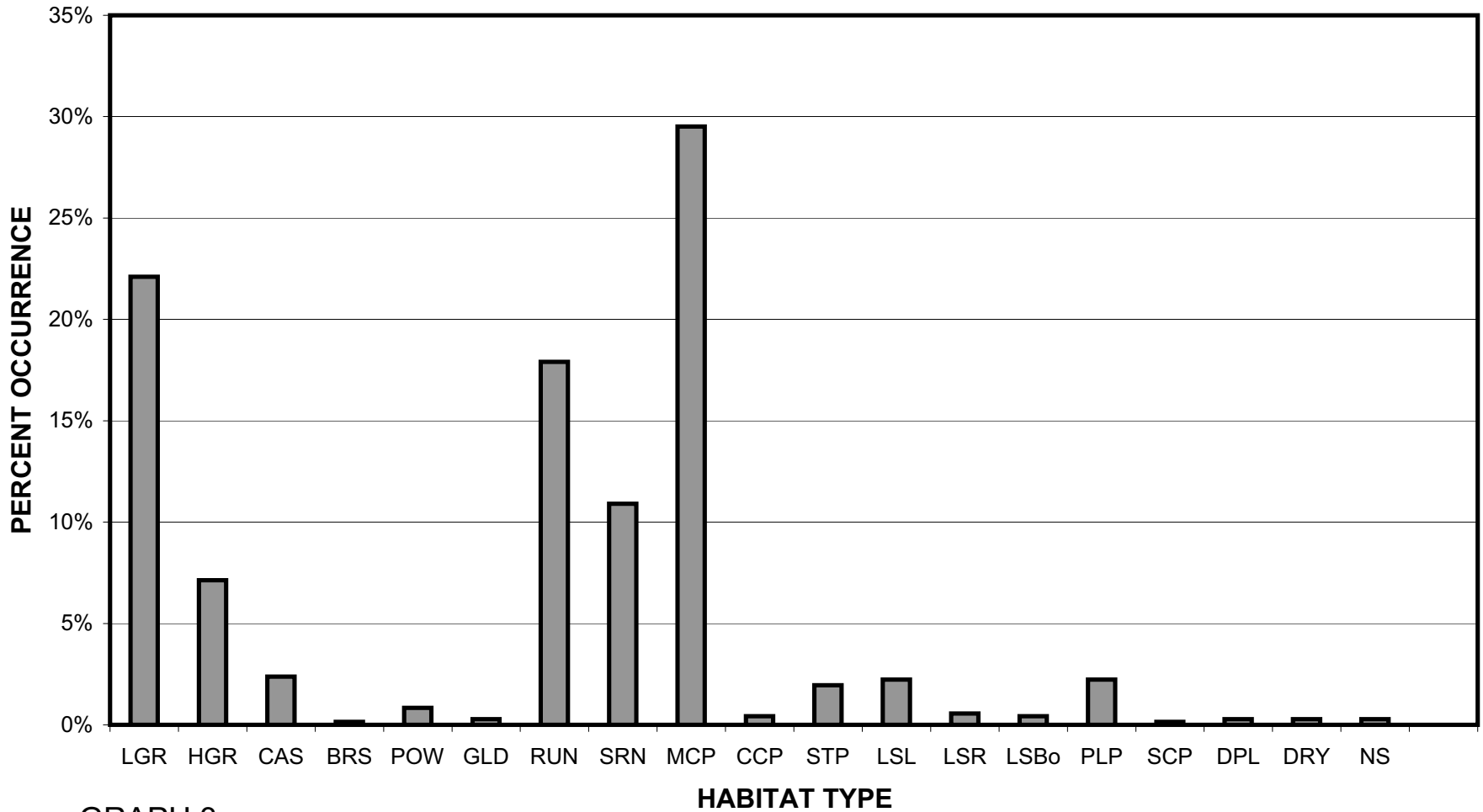
**JACOBY CREEK 2008
HABITAT TYPES BY PERCENT TOTAL LENGTH**



GRAPH 2

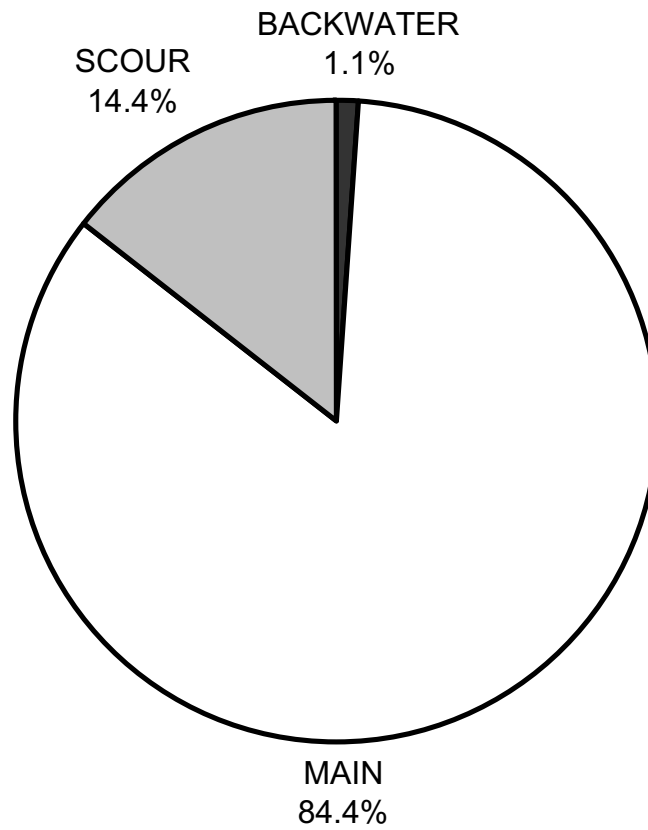
JACOBY CREEK 2008

HABITAT TYPES BY PERCENT OCCURRENCE



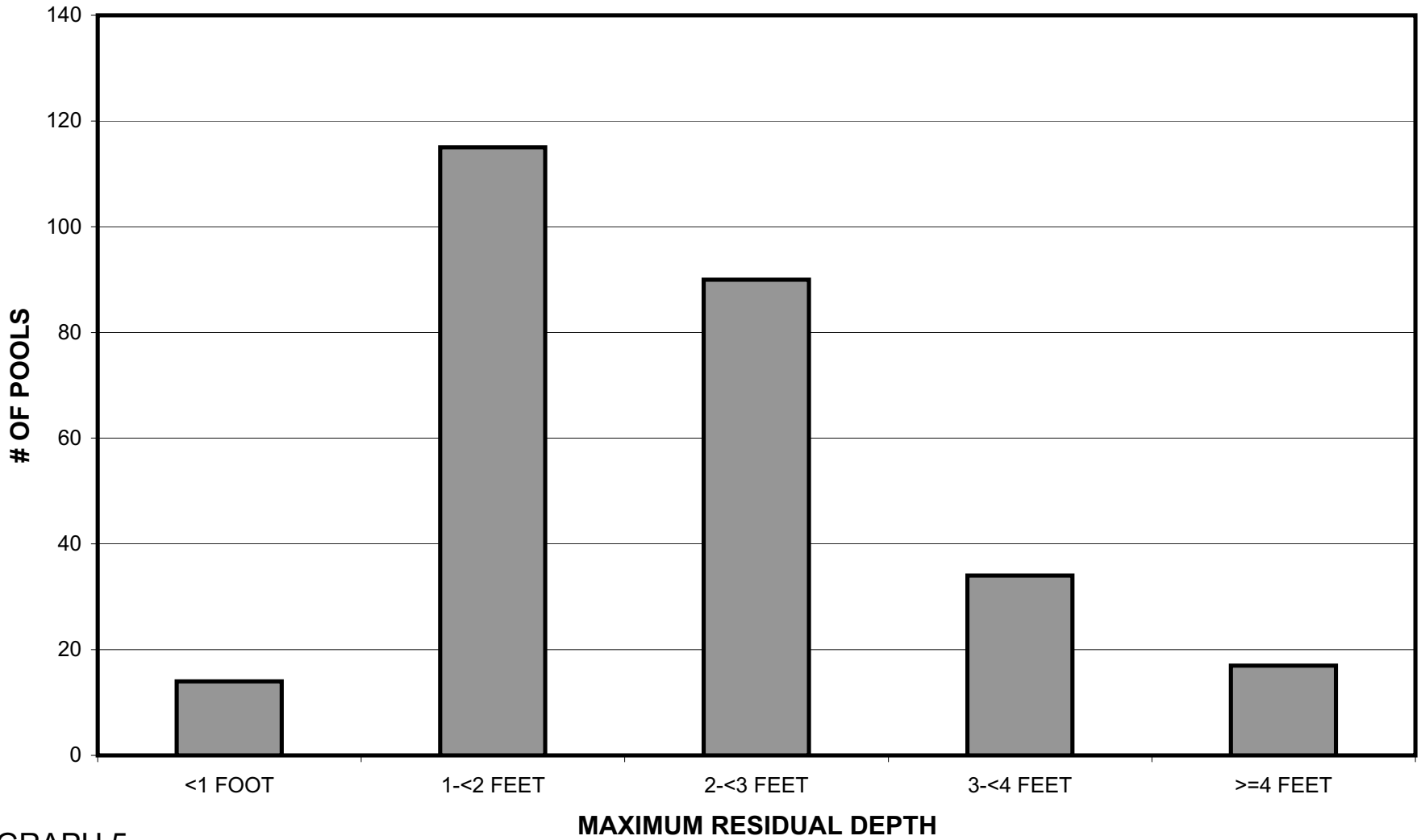
GRAPH 3

JACOBY CREEK 2008 POOL TYPES BY PERCENT OCCURRENCE



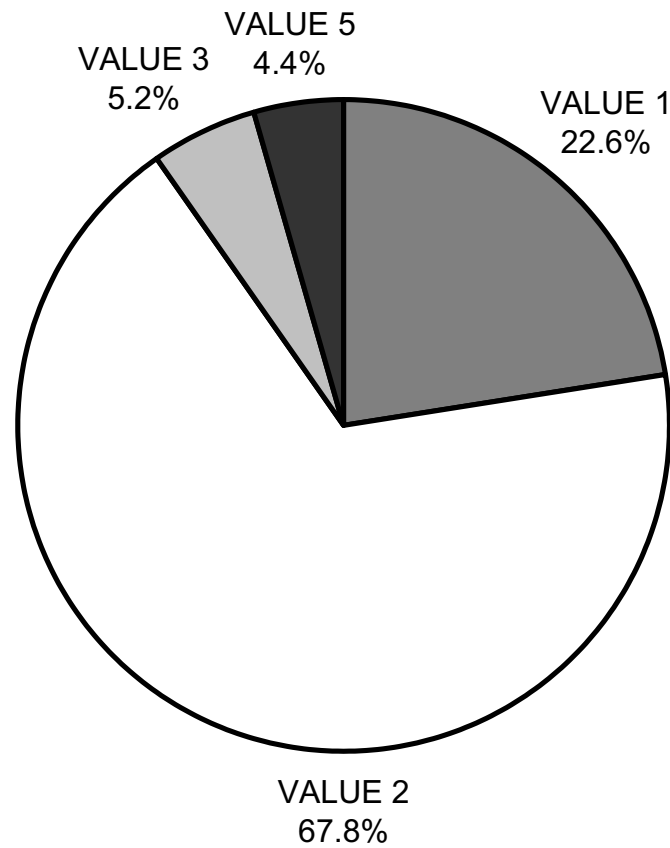
GRAPH 4

JACOBY CREEK 2008 MAXIMUM DEPTH IN POOLS



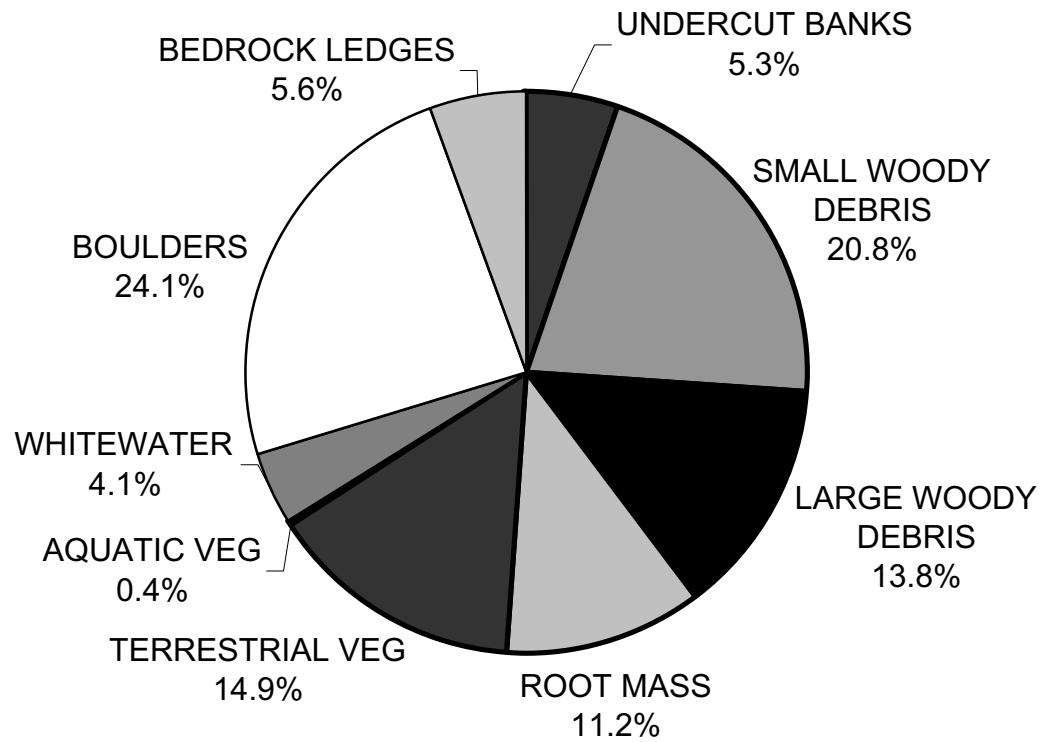
GRAPH 5

JACOBY CREEK 2008 PERCENT EMBEDDEDNESS



GRAPH 6

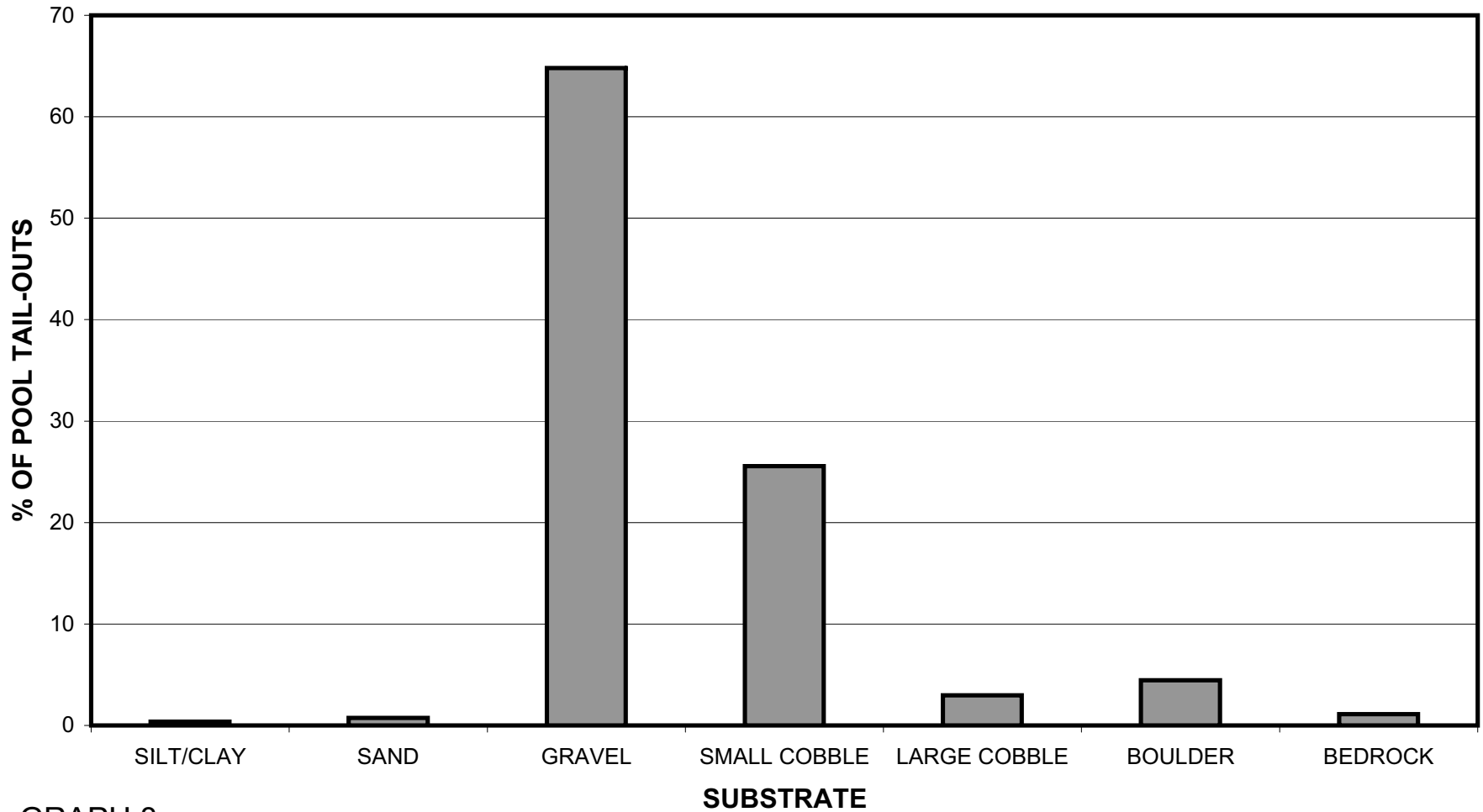
JACOBY CREEK 2008 MEAN PERCENT COVER TYPES IN POOLS



GRAPH 7

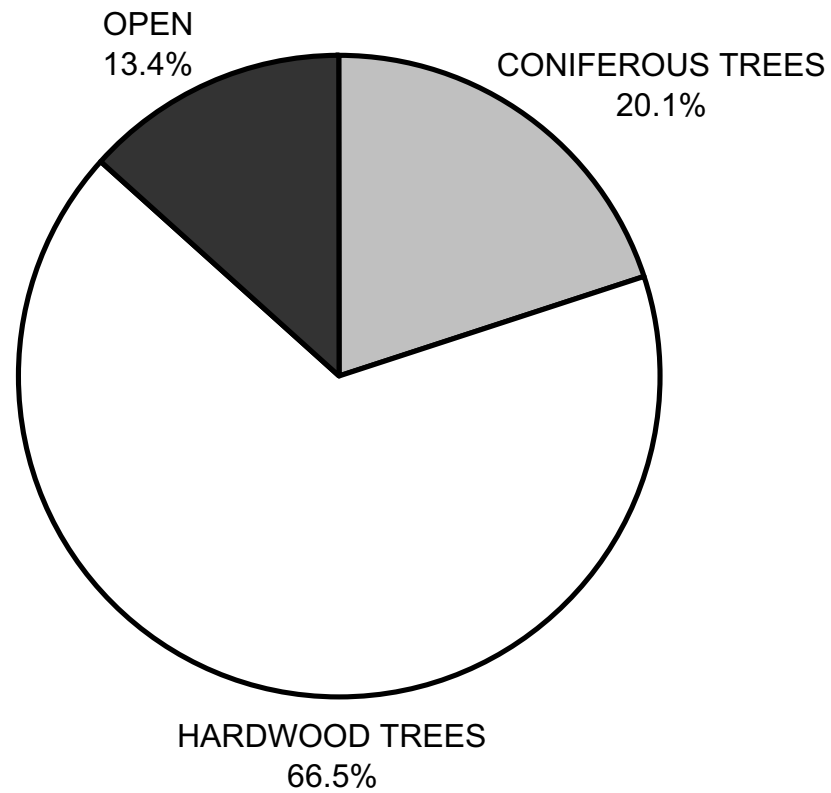
JACOBY CREEK 2008

SUBSTRATE COMPOSITION IN POOL TAIL-OUTS



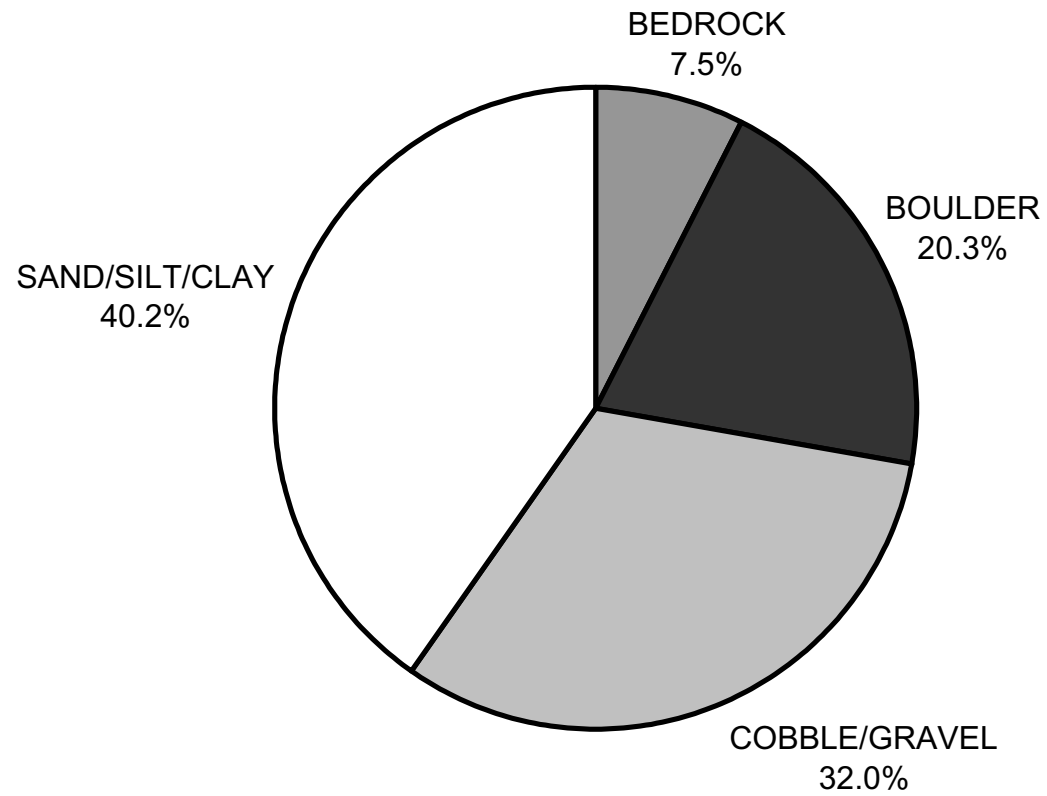
GRAPH 8

JACOBY CREEK 2008 MEAN PERCENT CANOPY



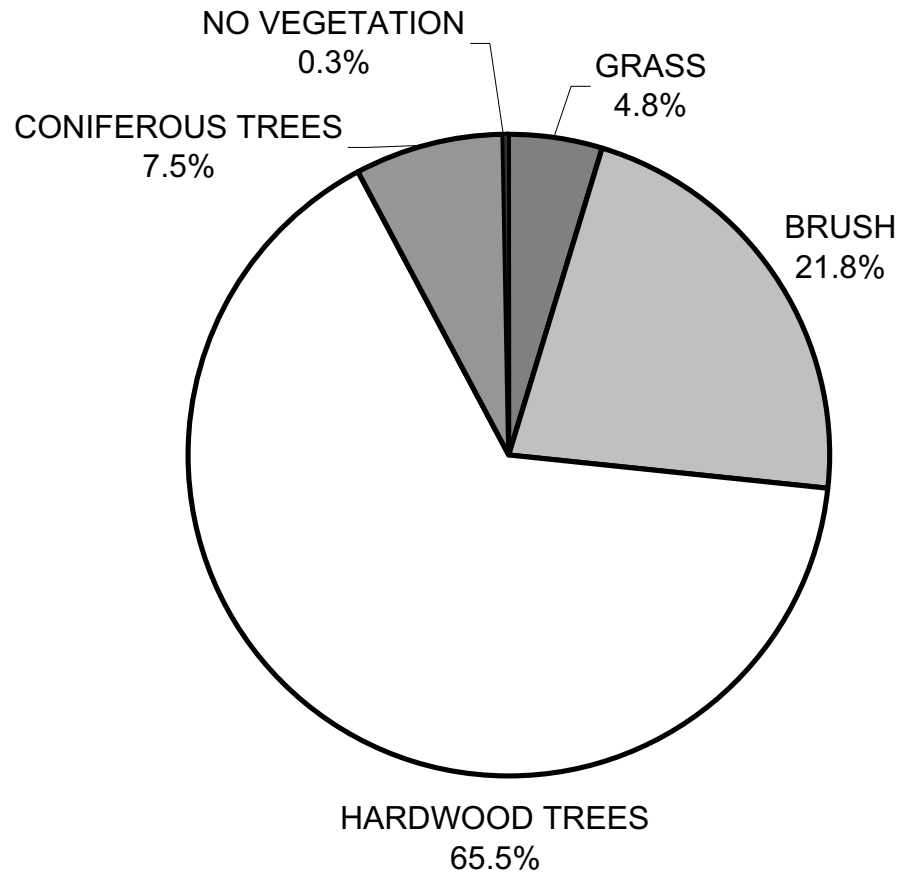
GRAPH 9

JACOBY CREEK 2008 DOMINANT BANK COMPOSITION IN SURVEY REACH



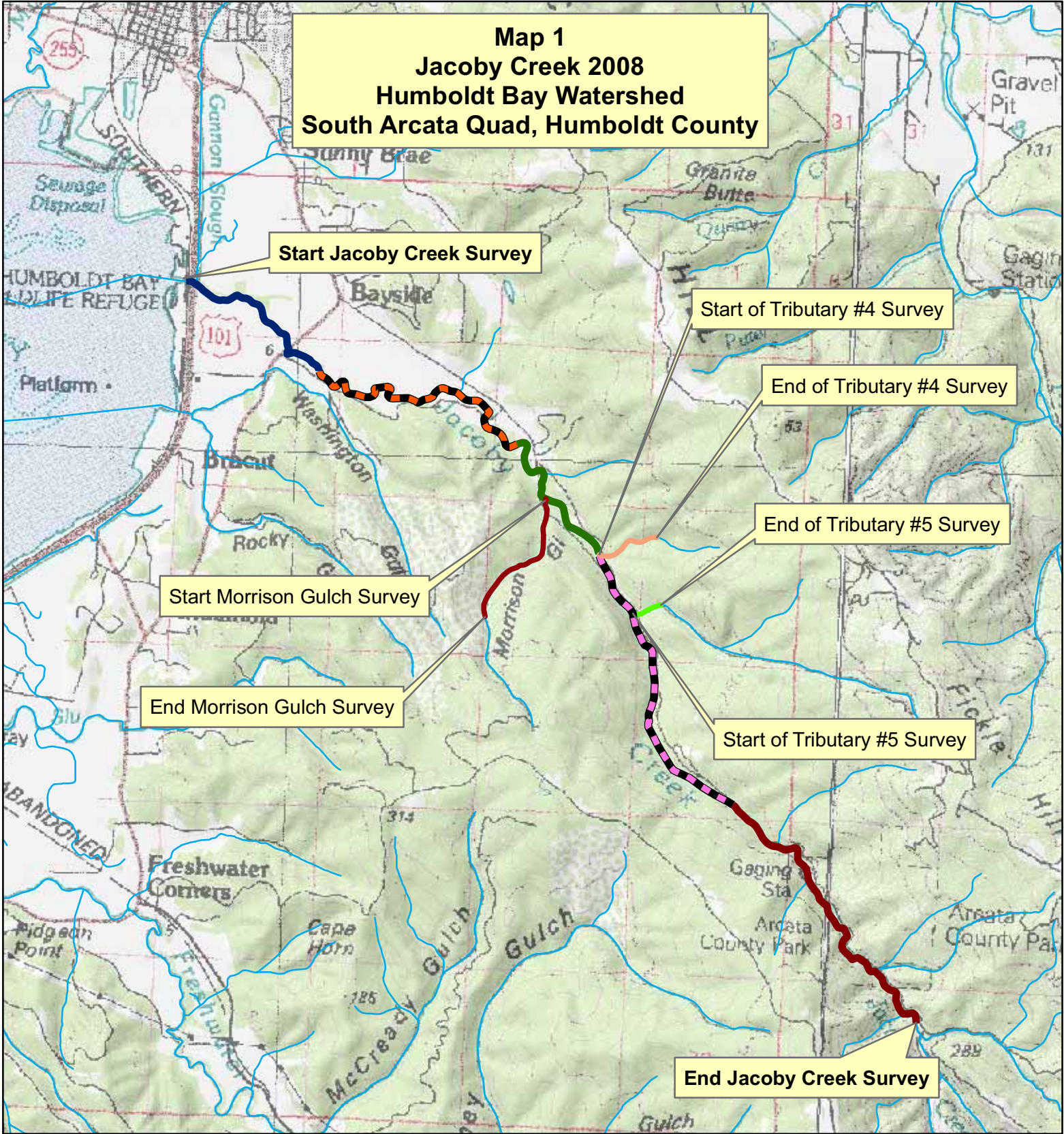
GRAPH 10

JACOBY CREEK 2008 DOMINANT BANK VEGETATION IN SURVEY REACH



GRAPH 11

**Map 1
Jacoby Creek 2008
Humboldt Bay Watershed
South Arcata Quad, Humboldt County**



Legend

- Reach 1, C4 Channel Type
- Reach 2, F4 Channel Type
- Reach 3, C3 Channel Type
- Reach 4, G2 Channel Type
- Reach 5, F4 Channel Type
- MorrisonGIch
- Unnamed Tributary #4 (LLID# 1240295408198)
- Unnamed Tributary #5 (LLID #1240251408144)

